

To: Dana Backer[dbacker@blm.gov]
From: Betenson, Matthew
Sent: 2017-08-30T11:02:22-04:00
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Subject: Fwd: Doc to fix
Received: 2017-08-30T11:33:33-04:00
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----- Forwarded message -----

From: **Betenson, Matthew** <mbetenso@blm.gov>
Date: Wed, Aug 30, 2017 at 8:33 AM
Subject: Doc to fix
To: "Grimm, Paul" <pgrimm@blm.gov>

Hi Paul,
Thanks for your help with this!

--

Matt Betenson
Associate Monument Manager

Grand Staircase-Escalante National Monument
669 South HWY 89A, Kanab, UT 84741
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THE SECRETARY OF THE INTERIOR

WASHINGTON

NOV 6 1996

Memorandum

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To: Director, Bureau of Land Management
To:

From: s _ ecreury

A handwritten signature in black ink, appearing to read "Bruce Babbitt".

Subject: Management of the Grand Staircase - Escalante National Monument

On September 18, 1996, the President created by Proclamation the Grand Staircase - Escalante

National Monument in Utah. This is the first National Monument in his term for which management responsibility has been given to the Bureau of Land Management (BLM), offering BLM a highly visible opportunity to demonstrate its stewardship. The purposes of this memorandum are: (a) to direct that you issue interim guidance for managing the Monument during the next three years; and

to direct you to prepare the management plan for the Monument for my adoption by the end of that period;

The President's Proclamation directs management of the Monument pursuant to applicable legal authorities, including the Federal Land Policy and Management Act (FLPMA) and the National Environmental Policy Act (NEPA). Further, I want to make certain that we work very closely with the State of Utah as our efforts proceed. While stewardship of the Grand Staircase - Escalante

National Monument is the responsibility of this Department, I believe an effective working

relationship with the State is crucial to the development of an effective management plan. The State possesses expertise in numerous management disciplines, and its capabilities will complement ours.

own.

INTERIM MANAGEMENT DIRECTION

The public should have more information concerning the management of specific activities

during the three year interim period. Accordingly, I ask that you issue appropriate guidance to field managers as soon as possible. Field managers should be fully conversant with that guidance and initiate efforts to provide information to the public as necessary.

T unique geologic, paleontological, ecological, biological and historical values. It also stated that
h valid existing rights (YER) must be recognized, withdrew Federal lands and interests in lands within
e the Morigment from the country, location, sale, lease, or other disposition (except
P exchange). Under the public land laws including oil and others, the mineral leasing; and mining laws,
r and stated that existing grazing uses shall continue to be governed by applicable laws and
e regulations other than the Proclamation, As a general principle,
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actions that are not precluded by the Proclamation and which do not conflict with the established purposes of the Monument may continue..

DEVELOPING THE MONUMENT MANAGEMENT PLAN

The President's Proclamation directed me to prepare, within three years, a management plan for the Monument and any necessary regulations. You should take the lead in preparing the plan and proposing it for my adoption. In preparing the plan, you must make certain that it reflects the purposes for which the Monument was established.

In order to assure an effective planning effort, you should develop a detailed inventory of significant resources within the Monument's boundaries which have been identified thus far through available

sources. The inventory should have a usable format and be easy to update as new information becomes available. Attached is a bibliography of monument resources that was completed, in connection with the Proclamation. Although there is considerable understanding the Monument's attributes, much more work is needed to identify, assess, interpret and protect them in an integrated manner:

In addition to the State; local and Tribal governments, the private sector, the public and other; Federal agencies have interests and insights as to managing the Monument's resources .and integrating the Monument with local community development. I expect you to be energetic and innovative in

working with these entities. Many, models for involving our neighbors have been developed and implemented. Useful lessons can be drawn from these models throughout the West by both government and non-government entities.

The management of the Grand Staircase-Escalante National Monument is one of the Department's most visible and important priorities. Your work will have a profound impact on the public's assessment of the Bureau and of Federal land management in general. I know that the challenges of managing the Monument and preparing its management plan are significant and encompass a very broad variety of scientific, historical, and economic considerations. The Bureau will have my full support and encouragement as your efforts proceed.

Attachment

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Grand Staircase Escalante National Monument
List of Historic and Scientific objects of Interest

Objects of Geologic Interest

Description: Perennial streams enter entrenched canyons in white **Navajo** and deep red Windgate Sandstone. Deer Creek, Steep Creek, and The Gulch have perennial flows of clear cold water. The Gulch leads up into the spectacular Circle Cliffs where remarkable specimens of petrified wood (60 ft. logs) exist in the Morrison and Chinle formations..

Location: Escalante Steep Creek WSA

Source: Utah BLM Statewide Final Wilgerness EIS, 1990

Description: White Canyon cuts through the **Kaibab** Limestone to the Coconino Sandstone, the oldest stratum in the Upper Escalante drainage.

Location: Escalante Studh0rse Peaks unit

Source: Davidson, E.S., Geology of the Circle Cliffs Area, Garfield and Kane Counties, Utah, 1967. 10

Description: Big Spencer Flat Road and the V Road, is site of thunderball iron concretions known as Moqui marbles. These oddities weather out of the Navaho

sandstone and are a popular recreation-feature.

Location: North Escalante Canyons\ . WSA

----- *J* ----- ----- **Ea1pa**

Source: Sargent, K.A., Environmental Geologic Studies of the
Basin, Utah. p. 16, and Utah BLM Statewide Final Wilderness EIS, **tbs** Coal

Description: The Waterpocket Fold tops out at Deer Point (T,243 feet). Host of the Waterpocket Fold is in the Capitol Reef National Park where it is a major

Source: Utah Wilderness Coalition. Wilderness at the Edge: Davidson, E.S., Geology of the Circle Cliffs Area, Garfield p. 189, and and Kane counties,

!ltah, 1967, p. 61

Description: The inner gorges of the upper Moody canyons cut into the relatively harder Kaibab limestone and Coconino Sandstone (oldest exposed layer in this

regulation).

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Source Utah Wilderness Coalition . Wilderness at the Edge.

Valley Creek Canyon and consequently, the area on J. Pfleains in its natural condition. A perennial stream cuts through alluvial benches. It is relict and

probably possesses important scientific values - - -

Location: Mud Springs Canyon WSA

source: Utah BLM statewide final wilderness Ers. 1.990

Description: The East Kaibab Monoclinal or the Cockscomb is unique as a Colorado

List of Historic and Scientific Objects of Interest

Page -

Plateau structure. Its alignment with the ?aunsaugant. Seevier, and Hurricane faults suggest that it too could be a fault at depth. It extends from the Colorado River north to Canaan Peak and is a major landmark.

Location: Kaiparowits Plateau The Cocksco:r..b

WSA Source: Utah 9LM Statewide Final Wilderness

E:S. 1990

Description: The Blues a Cretaceous shale badlands, richly colored and contrasting with adjacent pink sandstone cliffs that forms a significant part of the vista for visitors to Bryce Canyon National Park; The Kaiparowits formation is well exposed here represents an accumulation of exceedingly rapid proportions and an immature sedimentary region which is not well displayed in any other formation in the Colorado Plateau.

Location: The Blues WSA (near Bryce Canyon)

Source: , Welch, S.L. . Rigby, J. . Hamblin, W.K.,
A Survey of Natural Landmark Areas of the North Portion of the Colorado
Plateau, 1980. p. 248

Description: Fiftymile Mountain is a complex of deep canyons; upwarps. monoclines, hogbacks and a spectacular 42 mile long Straight Cliffs wall, topping a thousand foot ,high cliffline of the Suranerville. Morrison and Dakota formations. This complex marks the edge of the Kaiparowits Plateau.

Location: Kaiparowits Plateau Fiftymile Mtn: :tain-WSA
 Source: Utah SLM Statewid F'inal Wilderness E:S, 1990

Description: ancient coal fires of Right Hand Coli et Canyon have left surface remains in the form of clinkers and deep red ash. These remains dominate the visual character of the drainage.

Location: Carcass Canyon WSA

Source:, Utah 9LM Statewide Final Wilderness E:S, 1990

Description: Arch. Span of 40 feet located in Calf canyon. and is visible from the Alvey Wash road.

~~:o :a = i- n :a:c:s (ay n_w:A~~

Source: Utah BLM Statew·iae Final Wilderness EIS, 1990

Description: Burning Hills naturally occurring underground coal fire S' have turned steep-and-rugged exposed hilltops a distinctive red.

Location: Burning Hills WSA

Source:.. Utah ,SLM Statewide Final Wilderness EIS, 1990

Description: Devils Garden oddly shaped arches (including Metate Arch) and rock formations in the hills at the foot of the cliffs marking the Kaiparowits Plateau.

Location: **Carcass Canyon-WSA (east of WSA)** --
Source: U.S. BLM Statewide Final Wilderness EIS, 1990

Description: This area possesses exceptional scenic values and contains a

List of Historic and Scientific Objects of Interest

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portion of the Cockscomo, a prominent southern Utah geologic feature. the Cockscomb forms 2 parallel knife edged ridges with a bisecting V shaped trough. Flatirons, small monoliths, and other colorful formations are present on the west ridge. These major features of south central Utah cover over 4,000 acres.

Location: Mud Spring WSA.

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: An interesting fold in Henrieville Creek along the northwest boundary of the WSA is of geologic interest and a sightseeing attraction.

Location: Mud Spring WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description; Window Wind Arch above the middle trail has scenic value because of its location on the very edge of the Straight Cliffs. The Straight Cliffs escarpment is a major landmark in south central Utah and an important scenic feature within view from the Hole in the Rock road. Woolsey Arch is located in

Rock Creek Basin, an area of colorful Navaho sandstone and high cliffs.

Location: Fifty Mile, Mountain WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Unique because it consists of 2 prominent southern Utah physiographic systems. It includes the eastern most extension of the White Cliffs' component of the famous ascending staircase, cliff and terrace physiography, the Vermillion, White, and Pink Cliffs; and east of the Paria river, the dividing point is the landscape representative of the Glen canyon physiography of sculptured, dissected, and exposed, Navaho sandstone. The area where these merge between Deer Range and Rock Springs Bench is a highly scenic

complex and colorful
landscape

Location: Paria-Hackberry WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description' The Vermillion Cliffs with its associated Wingate Sandstone cliffs, colorful Chinle badlands, and canyons with their multiple colors and the intensity of coloration contribute to high scenic quality. Included in this landscape are Hackberry Canyon., Paria River Valley, Hogeye Canyon, the Pilot

Ridge Starlight Canyon, Kirby's Point area and Eight Mile Pass.

Location: Paria Hackberry WSA.

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: An area of high scenic value include the breaks of the wash beds and the west wall of Cottonwood Canyon, upper tributaries to Hackberry Canyon. Death Valley Draw, and the exceptional Navajo Sandstone domes and formations on either side of lower Hackberry Canyon.

Location: Paria Hackberry WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: •FourONA's designated to preserve •unique scenic values and natural wonders•. North Escalante Canyon (5,800 acres), The Gulch (3,430), Escalante Canyons (480, acres), Phipps Death Hollow (12 more outside WSA)

List of Historic and Scientific Objects of Interest

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Location: North Escalante Cahyons WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Location: North Escalante Canyons/The Gulch ISA

Desc: option: This area is geologically complex and has some of the most outstanding canyon scenery in the country! Harris Wash a canyon of the classic Escalante River drainage canyon form with many entrenched meanders in the Navajo

Sandstone. - - - - -

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Desc: option: A unique feature of the Burning Hills is the red coloration in the landscape is the result of geological changes attributed to the naturally occurring coal fires. The coloration creates a highly scenic area.

Location: Burning Hills WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Desc: option:

The White Cliffs are high white or yellow cliffs of lava flows. Sandstone, varying in height from 600' at Deer Springs Point. bench to 1,200'

Deer Springs Point. and the Sheep Creek Bull Valley Gorge Paria River confluence. The cliffs consistently reach a 1000' in height and the cliffline is interrupted by 8 canyons.

Locacion: Paria Hackberry WSA

source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: option:

area contains twenty four undeveloped springs.

located in upper Paria. 6 in hackberry, 5 on the eastern border of Cottonwood Creek. and 1 on west. boundary.

There are also 6 developed springs. These are

significant features in this arid environment.

Locacion: Paria Hackberry WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Phipps Death Hollow ONA (12/23/70) contains 34,248 acres managed to preserve scenic values and natural wonders.

Location: Phipps Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Arches. Peek a boo Rock, Wahweap Window, Jacob Hamblin Arch, Starlight Arch, Cobra Arch, Sam Pollack Arch, Woolsey Arch, and several more unnamed arches and natural bridges.

Location: Kaiparowits Plateau and adjacent areas

Source: sargent, K.A., Environmental & Geologic Studies of the Kaiparowits Coal Basin, Utah.

Description: Sand calcite crystals from the Morrison Formation. These crystals are the first reported occurrence of rocks of Jurassic age and only reported sand crystals in southern Utah.

List of Historical and Scientific Objects of Interest

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Location: Kaiparowits Plateau

Source: Sargent, **K.A.**, Environmental Geologic Studies of the Kaiparowits Coal-Basin, Utah. p. 18

Description: Circle Cliffs in the northeast portion of WSA features intensively colored red, orange, and purple Chinle mounds and ledges at the base of Wingate Sandstone cliffs. Vertically jointed cliffs banded with red, yellow, and white colors and bench tops and upper cliff faces possess innumerable orange-red Kayenta Sandstone knobs. One of most spectacular and distinctive landscapes on

the Colorado Plateau.

Location: Steep Creek WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Area includes Escalante Natural Bridge (130' high, 100' span) and 4 other natural bridges and arches.

Location: Phipps...Death Hollow WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: The Gulch is a major geologic feature. Deeply entrenched very sheer and straight line Wingate Sandstone walls. High ridges and slickrock peaks. Ridges drop fairly abruptly to canyons below.

Location: Steep Creek WSA-

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: La. manite Natural Bridge. Actually a single arch with good symmetry and form. Located in an impressive setting in a deep side canyon to The Gulch.

Location: Steep Creek WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Petrified wood. Upper Guich-Circle Cliffs contains large, unbroken logs of petrified wood (NEA 2,213 acres). Maximum log length 36'. The scenic

values of these logs is enhanced by their colorful surroundings.

Location: Steep Creek WSA

Source: Utah Statewide Wilderness EIS, 1990 W FEIS 3B 19, arid Sargent, K.A., Environmental Geologic Studies of the Kaiparowits Coal...Basin, Utah. p 13.

Description: Outstanding scenic values include the upper portion of Paradise Canyon where sandstone in the Wahweap Formation outcrops as colorful walls and cliffs. Ponderosa pine growing in the sandstone erumc;e the scenic values. 'l'Wo

'Sandstone monoliths or fins above Alvey Wash are prominent geological fQatures.

Death Ridge WSA

Location

source: Utah BLM Statewide Final Wilderness EIS, 1990

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Description: The area contains a unique canyon and bench system. The entire ISA contains outstanding scenery. Examples include the area east of Horse-canyon. Four canyons have isolated 10 benches of varying size Many bench tops have

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intricate pattern of innumerable orange red Kayenta Sandstone knobs. Wolverine Canyon and Death Hollow have extremely narrow and convoluted sections. Another feature. Harris Wash a canyon of the classic Escalante River drainage canyon form with many entrenched meanders in the Navajo Sandstone.

Location: North . Escalante Canyons/The Gulch ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Mollie's Nipple, an erosional remnant is a major landmark in the area.

Location: Kaiparowits Plateau.

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Natural Arches. Sam Pollock Arch, located at the head of a tributary drainage of Hackberry Canyon, and Starlight Arch located west of No

Man's Mesa. - - - - -

Location: Paria Hackberry WSA

Source Utah 3LM Statewide Final Wilderness E.IS, 1990

Description: Area of diverse geology represented by spectacular deep canyons. The Escalante River canyon is 1100 feet deep. The canyon walls are rough and broken and the canyon is narrow and it meanders. white to golden sandstone

has been eroded into expanses of slickrock. Death Hollow Canyon is 1,000' feet deep and meandering. The extensive upper basin through which Mamie Creek flows is a extremely dissected area of canyons, tanks, other formations. Red layers of

Carmel Formation-cap-high - sas and ledges of the exposed Ka yenta Formation.

Location: Phipps Death Hollow ISA

Source: Utah ELM Statewide Final Wilderness EIS, 1990

Description: Petrified wood deposits just west of the Old Paria Townsite and in Hackberry Canyon. Both are in the Chinle formation.

Location: Pa i'a Ha-ck-be-ry WSA
Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description : Kill the topographic features of the Kaiparowits ,regin **have** been developed in sedimentary rocks. The Kaiparowits Plateau is a slightly tilted sedimentary mass that extends as a narrow mesa from the Hig h Plateaus to Glen Canyon 70 miles distant. Its culminating point, Canaan Peak is an outlier Table Cliff Plateau; the Paria Plateau is a huge block of sandstone, the

Waterpocket monocline is a ridge of folded rock intricately dissected and flanked "by hogbacks, and the broken comb" in the vicinity of **Paria** is the edge of sandstone beds upturned in the East Kaibab fold. The Circle Cliffs are inward facing walls of sandstone that rim an oval depression. These prominent features are but large scale examples of the mesas, buttes, and ridges tha t characterize

the landscape of southern Utah.

Location: Kaparowits Plateau region

source: Gregory, H.E. and Moore, R. C. The Kaiparowits Region; A Geographic and Geologic Reconnaissance of Parst of Utah and Arizona. 1931.

Description: **Paria River** from Colorado River to its source, identified by NPS as

List of Hiscoric and Scientific ObJeccs of

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possessing values that may be of national significance, potential to be included in the National Wild and Scenic River System., ,

Location: Paria Hackberry WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Escalante River from Lake Powell to its source , a section of **14.9** miles was designated as for study as a candidate Wild and Scenic River by the Secretary of the Interior on 10/11/70.

Location: Phipps Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

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Description: Lower Calf Creek **Falls**. Calf Creek Canyon is characterized by red alcoved walls, 2' waterfalls, and extensive expanses of white slickrock. Lower Calf Creek Falls drops 126' and Upper Calf Creek' sdrop is **86'**. High educational

~~values-associated with interpretation of these areas.~~

Location: Phipps Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: The area contains 40 miles of perennial streams, a significant feature in this arid environment.

Location: Phipps Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

, Objects of Paleontologic Interest, August, 196

Description: Fossil assemblage photographs. Typical mollusks from Tropic Shale, south of Escalante include straight cone edaphalopods, ammonites, gastropods, and

pelecypods and Cretaceous sharks teeth from the Straight Cliffs Formation.

Location: -Kaiparowits Plateau- - - -

Source: Sargent, K.A., Environmental Geologic Studies of the Kaiparowits Coal Basin. Utah. pp 1 4 15

Description: Gray Cliffs/Pink Cliffs This sequence of rocks may contain some of the best and most continuous records of Late Cretaceous terrestrial life in the

world. Formation has yielded early lizards, dinosaurs, crocodilians - mammals, turtles, mollusks.

Location: -Kaiparowits - The Blues WS- - - -

Source : BLM, Escalante/Kanab RMP Gran<!_ Staircase Ecosystem J\analysis
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Description: Fossils deemed by the Museum of Northern Arizona in a 1911 study to be of major importance. They are found in the Cretaceous Wahweap Formation. Outcrops include abundant fragments of turtle shells and dertosaurus. af; Swell as several crocodile teeth. There is an excellent chance that fossils will be found.

Location: Kaiparowits Plateau Nipple Bench unit'

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Source: BLM, Kaiparowits power project environmental impact statement, 1976

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Desc::: ip ::on: The Straight Cliffs Formation is limited to the southern Utah area. It contains primitive mammals including one of the potentially oldest marsupial fossils identified.

Locat::ior.: Kaiparowits Plateau

Source:, SLM, Warm Springs Project Preliminary Draft EIS, 1996

Desc::: ipc::on: Invertebrate and vertebrate specimens found Straight Cliffs, Tropic Shale, and Dakota Formations. 13 collection sites recorded {gastropods, cephalopods in upper Cretaceous Formations, vertebrate in Dakota and Tropic Sh lesl. Likely to occur along entire length of the Straight Cliffs

Location! Carcass Canyon WSA

Source: Utah BLM Statewide Final Wilderness EIS. 1990

Descript:.ip_n: The Kaiparowits is of interest in understanding the evolution of mammals and other terrestrial vertebrates. Very little is known of Cretaceous mammals prior to the latest part of that period. The mid Cretaceous lian twilight zone, is spanned by the fossiliferous, terrestrial roe; units of the Kaiparowits region! They contain unique evidence bearing on the early diversific; tion of important mammalian groups of the Late Cretaceous. The thickness, continuity, and broad. temporal distribution of the Kaiparowits sequ.ece provides the opportunity to document changes in tel.: "restrial vertebrate as_sembl, ages over a wi.de span of Late Cretaceous ti%ne.

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Locatidn: Kaiparowits Plateau

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Source: Eaton, Jeffrey G., and Cifelli, Richard L. Preliminary report on Late Cretaceous mammals of the Kaiparowits Plateau, southern Utah, 1988

Description: Extr ely .significal:lt fossils includng marine ,clJ'ld orac,kish water mollusks. turtles, crocodilians, lizards, dinosaurs, fishes, and mammals have been recovered from the Dakota formation, Tropic shale, Straight Cliffs Formation. (Tibbet Canyon, Smiley Hollow, and John Henry members), clU1d Wahweap fac,riation in the area around the proposed Andelex mine and some localities lie dii;:ectly along

the proposed haul rout s.. Th ifs7quence o fr9 ks(including the ov rlying Wahweap and Kal.parow ts formations) contain perhaps the best and most,continuous record of Late, Cretaceous-terrestrial life in the world

Locat:ion: Kaiparowits Plateau

Source: Eatdn, Jeffrey G., Personal correspondence to Mr. Mike Noel, BLM, 1991

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Objects of Prehistoric Interest

Description: Sixty sites have been recorded and the potential for additional sites is exceptionally high. Sites discovered to date include lithic scatters, rockshelters (some w/storage cists and rock art), 1 pithouse village site and 1 structure (probably of Anasazi origin). Some of the rock art and rock shelter and 1 campsite are potentially eligible for nomination to the NRHP.

Location.: North Escalante Canyons/The Gulch ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Friendship Cove Pictograph site nominated to NRHP.. This site consists of a set of large Fremont style pictographs painted on the face of a large sandstone cliff. - - - - - ne

Location: Phipps Death Hollow ISA, -eastern-part - -

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Forty four sites of diverse types have been recorded in the area. rock art (petroglyph and pictographs sites (2 from Fremont culture), 1 Pit house village site, lithic scatters of Paiute and Anasazi and 6 rockshelters have been discovered. Potential for more sites is good.

Location: Phipps Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Situated at the intersection of three major prehistoric cultures the Plateau has long been a magnet for archeological study. It has been recognized that the Kaiparowits Plateau might contain important clues that would

aid in answering questions in the archaeology of the Southwest."

Location: Kaiparowits Plateau -

Source: Utah Wilderness Coalition. Wilderness at the Edge. p. 147 and Lister, Florence C., Kaiparowits Plateau and Glen Canyon prehistory, an interpretation based on ceramics, 1964 .

Description: Fiftymile Mountain Archeological District contains more than 400 sites including Anasazi habitations and granaries. Important scientific value. "Some of the most significant cultural" resources in the Four Corners area.

Archaeological: District (4V, 325 acre) has been nominated to NRHP. Majority of sites are masonry structures (of 1-10 rooms). Most are of Virgin Anasazi origin but include sites attributed to Fremont, Hopi, and Paiute. Navaho are also

expected of occupying the area. 4,700 total sites may be located in WSA.

Location: Fiftymile Mountain WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Sixty-five sites have been recorded. They include lithic and ceramic scatters, masonry structures (granaries and storage cists), one rock shelter. Many are associated with Virgin Anasazi/Kayenta Anasazi. Two are Pueblo II: III time period. Some sites are associated with Paiute age or Archaic age peoples. At least 8 sites in this area are eligible for nomination to the P.

Location: Wahweap WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: High concentration of prehistoric sites. Although surveys are incomplete for the Warm Creek unit more than 600 sites have been found ranging from lithic scatters and campsites to rockshelters.

Location: Kaiparowits Plateau/Warm Creek unit.

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Source: BLM, Kai::iarowits power project environmental impact statement, 1976

Description: Part of a larger area extensively used by the Kayenta Anasazi and later the Southern Paiute Indians. Site densities expected to be moderate to high.

Location: Kaiparowits Plateau/Squaw Canyon-unit

Source: ERT. 1980, Kaiparowits coal development and transportation study, final report

Description: Prehistoric site densities are high on top of Nipple Bench. Sites represent Fremont, Virgin Anasazi and Kayenta Anasazi. The sites represent complex associations of features and artifacts and indicate permanent or extensive camps in rock shelters. .)

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Location: Kaiparowits Plateau/Nipple Bench unit

Source: Fish, Paul, Preliminary Report Kaiparowits Power Project

Description: Six sites have been recorded. One is Pueblo II **Anasazi** occupatit?:?n site., with others unidentified.

Location: Burning Hills WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: One hundred-five sites (primarily lithic scatters) have been recorded covering a broad period of occupation. Ten rockshelters w/storage cists or storage caches, 1 w/masonry room, 3 w/granaries associated with Artasazi or Fremont have been discovered. Additional sites, include pictograph panels associated with shelter-sites and 1 burial site.

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Location: Carcass Canyon WSA

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Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: One hundred thirty-four documented sites represent virtually all known prehistoric cultures in southern UT (Anasazi, Fremont, Southern Paiute). 8,000 years of prehistory are represented. The sites primarily

represent temporary habitation, by hunter gatherers..

Location: Death Ridge WSA

Source: BLM Utah Statewide Wilderness EIS, 1990, and Hauck, F.R., Cultural Resource Evaluation of South-Central Utah, 1977-1978

Description: The area contains 41 recorded sites and based on surveys may

contain exceptionally high densities of sites.. Known sites include rockshelters, pit houses, lithic scatters, and masonry structures. Pictograph panels are in Deer Creek Canyon and petroglyphs are found in Snake creek canyon.

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A study located and estimated 612 sites per 23,000 acres, 564 potentially eligible for nomination to the NRHP (southern border of WSA). Another inventory estimated 360 sites per 23,000 acres at the northern border of the WSA.

Location: Faria Hackberry WSA

Source: Utah ILM Statewide Final Wilderness EIS. 1990

Description: The Kayenta Pueblo culture inhabiting the Straight Cliff and portions of the Escalante River drainage between A.D. 1000 and 1200 were likely in contact with the Fremont culture. Although both inhabited the area at the same time and competed for limited agricultural lands there is no evidence of open conflict during this time. Some modifications of pottery making technique between the two cultures indicates that there was trade and exchange between them. Little is known positively about the Kayenta culture/ an additional search in this area could provide valuable insight on interactions between the

two cultures. - - - - -

Location: Strain Cliffs WSA

Source: Lister, Kaiparowits Plateau and Glen Canyon Prehistory: An interpretation based on ceramics. 1964.

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Objects of Historic Interest

Description: Dance Hall Rock/Hole in the Rock Trail. While the Hole in the Rock Trail was under construction in 1879, Mormon Pioneers camped at Fortymile Spring and held meetings and dances in the shelter of Dance Hall Rock. Designated

Historical site by DOI-1970 ----- |

Location: Two miles west of the Glen Canyon NRA on the Hole in the Rock Trail

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Source: Utah Wilderness Coalition; 1. Wilderness at the Edge, p. 1:82

Description: Historic route constructed in 1879 to provide access from Escalante to areas on the opposite side of the San Juan River in Southeast Utah.

Location: Historic trail running from Escalante to Hole in the Rock in Glen Canyon

-NRA-----

Source: Lambrechtse, Rudi. Hiking the Escalante, 1985

Description: Boulder Mail Trail. Used to carry mail between Escalante and Boulder beginning in 1902. Much of trail still visible where necessary to construct through slickrock. Nominated to NRHP. Popular backpacking route.

Location: Phipps Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Boynton Road. Constructed 1909 as short cut between Escalante and 2 years because of flooding. Visible over approx 9

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Location: Phipps Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Escalante Boulder telephone line: First boulder Escalante telephone line constructed by Forest Service in 1911 providing first phone service to area. Still visible between Ancone, Flat and Sand Creek.

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Location: Phipps Death Hollow

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Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Washington Phipps grave. A historical grave site of an early pioneer shot in 1878 in a dispute with his partner John Boynton.

Provided the namesake for the area.-----

Location: Phipps Death Hollow

Source: Lambrechtse, Rudi. Hiking the Escalante, 1985

until the CCC built Hell's Backbone Road and Highway 12
.. .
in
1930 -

Location: Phipps Death Hollow ISA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

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Description: The Hattie Green mine, an early copper working located on the crest of The Cockscomb.

Location: The Cockscomb WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Old Paria Town site was established in 1874 on the bench above the eastern bank of the Paria River by Mormon settlers who attempted to farm the bottomlands. Site was abandoned in 1890.

Location: adjacent to Paria-Hackberry WSA

Source: Abby, Edward and Hyde, Philip. Slickrock p.46

Description: Old Paria Townsite movie set. Built in the 1960's to film several

movies. Now abandoned but still a popular recreation destination.

Location: adjacent to Paria-Hackberry WSA

Source: Abby, Edward and Hyde, Philip. Slickrock p.46

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Objects of Biological Interest

Description: Riparian zones are corridors for many of the region's species, including neotropical migrant birds. The corridors (including the Escalante, and Paria Rivers and Johnson Creek and their tributaries) bisect the region north to south, allowing for exchange of individuals among different animal populations. The importance of movement corridors to the long term viability of animal populations is of great scientific and management interest. This area would afford many opportunities to enhance this ecological issue.

Location: Entire monument proposal including the Escalante area, Kaiparowits Plateau, and areas west to Kanab including the Escalante, Paria rivers and

~~Johnson Geek~~

source: Edwards, Tom, 1996; Knopf, 1985; Armbruster and Lande 1993; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al. 1996; Diamond, 1981; Fahrig and Merriam, 1985; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.

Description: 25 miles of riparian corridor in unit; Connects mountains to desert lowlands.
Has great concentration of hanging gardens and riparian vegetation
including relictual populations in canyon bottoms. Also supports many rock crevice
coranunities. Connects other protected areas. High plant endemism, due
to large extent of parent material exposure.

Location: Escalante River

source: BLM Wilderness EIS; Knopf, 1985; Shulz, 1993; Armbruster and Lande 1993; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al. 1996; Diamond, 1981; Fahrig and Merriam, 1985; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.

Description: Riparian corridor links high country to lowland desert scrub. Connects protected areas. Has high concentrations of isolated communities; hanging gardens, rock crevices and canyon bottom coranunities. Also has an abundance of packrat middens.

Location: Paria River

Source: Van Devender and Spaulding, 1979; BLM Wilderness EIS; Knopf, 1985; Shulz, 1993; Armbruster and Lande 1993; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al. 1996; Diamond, 1981; Fahrig and Merriam, 1985; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.

Description: Fifty miles of perennial streams including the Paria River (which is a wild and scenic river inventory segment). Riparian vegetation covers 500 acres.

Location: Paria Hacking WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

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Description: Three major floras meet in this area. Plants from the Mojave, Arizona deserts and northern Utah are all found here, with a few species from the Great Plains. The Colorado Plateau is surrounded by high mountains, isolating the flora and fauna. Unlike many ecosystems, the plant density, diversity and stature within the monument is determined more by substrate than climate; Consequently, isolation, plus the great diversity of substrates (providing a wide range of soil chemistry and physical characteristics) found within close proximity to each other has resulted in a high level of plant endemism in this area. Eleven species found in the monument are found nowhere else in the world.

Of plants that occur only in Utah or on the Colorado Plateau, 125 species occur in the monument. The Canyonlands portion of the Colorado Plateau, much of which is contained in the monument, is considered the richest floristic region in the Intermountain West, and contains 50% of Utah's rare and endemic plants.

901 of these rare and endemic species are found on substrates typical of most of the monument. Of the Canyonlands area, the monument area is considered one of the most significant for endemic populations, with more than 10% of the flora being found nowhere else.

Of additional significance is that many of the plants in the monument are diploid species. This means they represent the basic genetic stock from which polyploid species in the area evolved. This makes this **area of great** significance to plant evolutionary biologists and provides a unique opportunity to study the evolution and speciation of plant species, as well as the structure and dynamics of plant communities independent of climate.

Location: Entire monument

Source: Kaiparowits Power Project EIS; Axelrod, 1960; Utah Natural Heritage Program plant database; Nabhen and Wilson, 1996; Shulz, 1993; Albee et al., 1988; Welsh, 1974; Welsh et al. 1975; Hintze, 1988; Dott, 1996; Shreve, 1942; Cronquist et al., 1977; Utah Natural Heritage Program plant database

Description: The Colorado Plateau was uplifted and downcut without deformation. As a consequence, large areas of unmixed geologic parent materials are exposed, and plants must adapt to large array of highly distinct parent materials. These substrates are sharply demarcated, and often occur within a few meters of each other. This situation offers the unique opportunity to examine the role of soil physical and chemical characteristic in determining plant and animal community structure independent of climatic variables, an important ecological question. It also results in different plant community structure and dynamics than is generally observed in other ecosystems. This area contains shales, siltstones, mudstones, sandstones and limestone of differing depths, and deposited in a variety of environments (marine, freshwater and eolian). Each soil depth and depositional environment has very different chemical and physical characteristics. As a result, there is a great diversity of substrates in this

area, each supporting unique plant community.

Location: Entire monument

Source: Hintze, 1988; Nabhen and Wilson, 1996; Gross, 1987; Dott, 1996; Roberts, n 1987

Description: The presence of steep elevational gradient gives the opportunity to sort out the role of temperature and precipitation in structuring plant and animal communities; Elevational gradients have traditionally been used by scientists as a way of examining factors controlling biotic community structure.

Juxtaposition of diverse substrates and elevational gradients give a DOI-2019-05 02145 unparalleled opportunity to determine the respective roles of soil.

chemistry, physical characteristics, elevation . J,"ainfall and
temperature in structuring biotic communities. In
addition, it all:ows for 'high iodiversity in a small are
a - - - - -
Loc:::>>cation: Entire monument

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Source: Kaiparowits Power Project EIS; Axelrod, 1960; Utah Natural Heritage Program plant database; Nabhen and Wilson, 1996; Shulz, 1993; Albee et al., 198; Welsh, 1974; Welsh et al. 1975; Hintze, 1988; Datt, 1996; Shreve, 1942; Cronquist et al.. 1977

Description: The Escalante Plateau is the home to approximately 300 species of amphibians, birds, mammals, and reptiles. This diverse set of wildlife species includes over 20 species of birds of prey including the bald eagle, peregrine falcon, and was the historical range of the condor. The region contains 2 of the 7 recognized centers of endemism for fishes of the western United States.

Location: Escalante Plateau

Source: ;a ids n e .;| 1996; ;o;;d a;ds, 1996." s;bhk;, R J., and Zar, , 1976

Description: Contains many different geologic substrates (therefore soils with different pH, physical and chemical attributes) in a small area. The majority of endemic in Utah are found on these particular substrates; consequently, this area is expected to have a high concentration of endemics.

Location: Escalante along boundary of Glen Canyon NRA and Capitol Reef National Park

Source: Utah Natural Heritage Program plant database; Nabhen and Wilson, 1996; Shulz, 1993; Albee et al., 1988; Welsh, 1974; Welsh et al. 1975; Hintze, 1988

Description: Large expanses of, fine-textured soils (Morrison, Mancos/Tropic) shales support large number of endemic plant species, fossils.

Location: Henrievill to Escalante

Source: Hintze, 1988; Shulz, 1993; BLM Wilderness EIS

Description: An exposed monocline with many soils/substrates in close juxtaposition provides tremendous biodiversity of both general and endemic flora. High salt content of stream provides habitat for salt tolerant riparian plants. Provides a elevational gradient from ponderosa pine to desert scrub. In addition, the rocky substrate has provided refugia for many Arcto Tertiary plants, providing a unique opportunity to examine the effects of ancient floral presence in the structuring of present day plant communities. This area also supports a very high diversity of both general and endemic flora.

Location: The Cockcomb

Source: Hintze, 1988; Shulz, 1993; Albee et al., 1988; Axelrod, 1960; Welsh, 1978; Stevens, 1992; Dott, 1996

Description: Contains a concentration of many different geologic substrates/soils with different physical and chemical attributes. This area has a high concentration of endemics. This boundary also abuts protected areas (Glen

Canyon, Capitol Reef), thereby effectively increasing the value of all three areas for biological conservation. In addition, the Waterpocket Fold has isolated two outcrops of the same parent material. These two areas now support different floras. This presents an outstanding scientific opportunity to explore processes of speciation.

Location: Far eastern

boundary- - - - -

Source: Hintze, 1988; Shulz, 1993; Albee et al., 1988; Axelrod, 1960; Welsh, 1978; Stevens, 1992; D'ott. 1996; Armbruster and Lande, 1993; Fahrig and Merriam, 1985; Beier, 1993; Belovsky, 1987; Brown, 1971; Davidson et al. 1996; Diamond,

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1981; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994.; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, 1980; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, 1974.

Description: This is an exposed monocline. Consequently, many substrates (Summerville, Morrison, Dakota, Tropic, Entrada, Navajo, Wingate and Carmel) are exposed directly next to each other, providing an opportunity for studies of ecological processes independent of climate. This monocline also has an elevational gradient, facilitating the study of effects of temperature and moisture on community dynamics. In addition, the rock substrate has provided refugia for many Arcto-Tertiary plants, providing a unique opportunity to examine the effects of ancient floral presence in the structuring of present day plant communities. This area also supports a very high diversity of both general and endemic flora.

Location: Straight Cliff area - - - - -
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Source: Hintze, 1988; Shulz, 1993; Albee et al., 1988; Axelrod, 1960; Welsh, 1978.

Description: Diversity of plant life ranging from low desert shrub to Ponderosa Pine (less than 1 mile apart) enhances the study and observation of ecology. 3 small stands of Ponderosa pine in Alvey Wash.

Ridge WSA. - - - - -
Location: Bear

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Contained within the monument are 3-5 spatially separate areas where the same substrates are exposed in close proximity to each other. In addition, there are 5 elevational gradients along riparian corridors. This is critical for replicated scientific work to be conducted.

Location: Entire monument

Source: Hintze, 1988; USGS Topographical Maps

Description: Riparian corridor with elevational gradient, connecting desert low lands to the high country. Vermillion, White, Pink Cliffs (Triassic, Jurassic, Cretaceous material);

Location: Johnson's Creek

Source: Hintze, 1988; USGS Topographical maps; Beier, 1993; Noss, 1992, 1993

Description: Fifty Mile Mountain, Canyon, and Pinto Mare Canyons.

Presence of aspen on Pleasant Grove, Steer

Location: Fifty Mile Mountain WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description.: Protects lands at low elevation sites frequently rich in species diversity. The range of elevation in these areas from approximately 4500' 8300 feet encompasses a wide variation in elevation and will capture the full

diversity of plant-and-animal species in the region.

Location: Entire monument proposal including the Escalante area, Kaiparowits Plateau, and areas west to Kanab

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Source: Hintze, 1988; Utah BLM Final Wilderness EIS, 1990

Description: The monwnent contains an abundance of hanging gardens, tinajas, canyon bottom, dunal pockets, salt pocket and rock crevice communities.

These small, isolated populations often contain unusual, often relictual plants and animals. Hanging gardens and canyon bottom communities harbor riparian plants and their pollinators, as well as unique vertebrates (bats and small mammals)

Tinajas are import.apt aquatic resources, and contain a diver!je' prray of tadpole, fairy and clam shrimp, amphibians, algae, water beetles, other crustaceans, snails, mosquito and gnat lar:vae and aquatic/riparianplants.

Highly saline areas are found. around many seeps arid streams, and consist of plants and animals adapted to highly saline conditions . Dun,;il pockets contain species adapted to shifting sands, while rock crevicle communities consistmostly of slow growing species that can thrive in extremely infertile sites.

These, communities offer a chance to examine gene flow dynamics, and to distip,guish the respective role of pollen versus seeds.

They offer an opportunity to study ground water flow dynamics in the absence of s.ignificant fluvial processes, an¢

island biogeography of plants, pollinators and ground dwelling biota. They also are highly simplified, discrete ecosystem\$, making them ideal for elucidatin basic ecosystem processes.

Location: Entire monument

Source: Nabhen and Wilson, 1996; Harper et al., 1994; Welsh et al., 1993; May et al., 1995; Fowler et al., 1995; Graff, 1988

Description: These canyons provide a hig concentrati on of isolated,unique plant and invertebrate communities: hanging garden, rock crevice, and canyon bottom communities. Many relictual plant species can be found in these communities.

Padc rat middens are undant, providing paleocl imate and paleo vegetation information.

Loc ation: Escalante Canyons

Source: Axelrod, 1960; BLM Wilderness EIS: Van Devender and Spauling, 1979; Fowler et al., 1995; Nabhen and Wilson, 1996

Description: Dunal pockets contribute Great Plains species to the flora. These are unique, isolated plant communities.

Location: Cockscomb to Kaiparwits-

Source: Hintze, 1988

Description: Unique, isolated communities are located throughout the **monument**. These include hanging gardens, tirijas, canyon bottom, dunal pocket, . salt pcket and rock crevice communities. They provide great opportunities for examinitlg

evolatlon, -gene flow, island-biogeography and, other ecological. principles.

Location: Entire monument

Source: Case and Cody: 1988; Diamond, 1981; Dott, 1996; Harris, **1984**; Ludwig and Whitford, 1981; Fowler et al., 1995; Nabhen and Wils'on, 1996 ; Rol:ererts, 19871 R ice. 1994; Axelrod, 1960

Description: Biological conservation theoirYand literature suggests that **large**

contiguous conservation areas increase both extent and probability of population survival, increases protection of migratory pathways, and is the **means of conserving aquatic and riparian**

communities.

Location: Entire monument

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Source: Soule, 1987; Davidson et al., 1996; Miller, 1961; Minckley and Deacon, 1968; Armbruster and Lande, 1993; Fahrig and Merriam, 1985; Beier, 1993; Belovslcy, 1987; Brown, 1971; Davidson et al. 1996; Diamond, 1981; Frankel and Soule, 1981; Harris and Gallagher, 1989; Heaney, 1984; IijCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, 1984; Pickett and Thompson, 1978; Primack, 1993; Saunders et al., 1991; Shaffer,, 1981; Soule, 1987; Soule and Wilcox, 1980; wegner and Merriam', 1979; Wilcove et al., 1986; Willis, 1974.

Description.: The connection with Glen Canyon provides a larger protected area. It also provides low desert vegetation as part of the vegetational gradients. Large areas are important for maintaining the evolutionary potential of plants and animals, allowing for the exchange of genetic material along the **separate**

~~populations that constitute population: - - - , - - -~~

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Location: Common boundaries and riparian connections with Glen Canyon NRA, Capitol Reef NP, Box Hollow Wilderness and Paria Wilderness

Source: Hintze, 1988; Shulz, 1993; Albee et al., 1988; Axelrod, 1960; Welsh, 1978; Stevens, 1992; Datt, 1996; Armbruster and Lande, 1993; Fahrig and Merriam, 1985; Beier. 1993; Belovsky, 1987; Brown, 1971; Davidson et al. 1996; Diamond, 1981; Frankel and Soule, 1981; Harris and Gallagher, J989; Heaney, 1984;; IUCN, 1978; Kushlan, 1979; Lomolino and Channell, 1995; Meffe and Carroll, 1994; Newmark, 1995; Noss, 1993; Patterson, ·19 4; Pickett and Thompson, 1978; Primack, 1991; Saunders et al., 1991; Shaffer, 1981; Soule, 1987; Soule and Wilcox, . 1,980 ; Wegner and Merriam, 1979; Wilcove et al., 1986; Willis, UJ'74.

Description: Cryptobiotic soil crusts are critical for soil stability, nutrient availability for vascular plants and normal soil surface temperatures. These crusts are extremely fragile and easily disrupted by soil surface disturbances such as trampling or off road vehicles. Since the soils in the monument are highly susceptible to erosion, it is important that **these** bioc ts be PX:Otect so they stabilize these erodiblesoil surf,aces. In addition." these eco tems have few nitrogen fixing plants. Since these crusts provide nitrogen to these

soils, they are a critical part of these nitrogen-limited ecosystems.

Entire monument
Locatio

n.
Source: Belnap, 1994, 1995; Belnap and Harper, 1995; Belnap et al. , 1994; Jefferies. 1989 ; Harper and Marble, 1988; Johansen, 1993; M4ck and Thompson , 1978; Fleischner, 1994

Description: Disturbance of most soil surfaces in the monument area will: result in soil surface temperature changes, as bio crusted surfaces are darker than the substrates underneath them. The expected lowering of temperature wi disturbance would result in cooler soil temperatures,**th** and later **spring** plant germination and lower nutrient uptake rates. This may adversely effect desert plant growthl,in early spring. Surface temperat\re& also influence foraging and burrowing patterns for many soil invertebrates, and many effect communi y dynamics of these species..

Location: Entire monument

Source: Ludwig cInd Whitford 1981; Belnap 1995

Description: Ecosystems in this area are some of the most '**stable**' documented to date, as both large and small scale disturbances are limited spatially and temporally. Very little of this area was glaciated in the Pleistocene. Most plant communities evolved without fire or grazing by large ungulate herds, as evidenced by characteristic soils and the flora. Catastrophic events are minimal, with the exception of wash bottoms. Microsite disturbances are minimal as well, as most soils populations of invertebrates. 1880 upp rt very low

photos repeated in 1990 show many sites virtually unchanged, with the same tree, shrub and grass individuals present, indicating very low species turnover rates -- in this region relative to other ecosystems. In addition, dead tree branches can still be found in virtually the same condition as they were 100 years ago, indicating plant tissue decomposition rates are extremely low in this region. This makes this area highly unique, as most ecosystems are believed to be structurally disturbed. In this region, ecological processes can be studied independent of the effects of disturbance to give us greater insight into their functioning (i.e. factors controlling exotic plant invasions, species-species interactions, etc.)

Soil physical, chemical and biological features appear to be both **easily** damaged (low resistance) by surface disturbance and have very slow recovery rates (low resilience) when compared to other deserts or more mesic systems. **This** may be a result of evolution of this ecosystem evolving in the relative absence

of disturbance (Belnap 1995; 1996). Therefore, this area is important in the study of how disturbance influences community dynamics, including species-species interactions, and for understanding how to restore these fragile systems. This also means that this area is highly susceptible to damage by different land uses, including recreation and grazing.

Location: Entire monument

Source: Belnap, 1995, 1996; Belnap et al., 1994; Mack and Thompson, 1982; Fleischner, 1994; Kleine, + and Harper 1972; Harper et al., 1994; Webb, 1994; Rogers, 1982; Pickett and White, 1985; Moldenke, 1995; Evans and Ehleringer, 1993; Turner et al. 1993; Iverson et al. 1981; Webb and Wilshire 1981; Larsen 1996; Bowers et al. 1994

Description: Isolation of this area has resulted in minimal human impacts. Many of the ecosystems found in this area have received little, if any, human use and the type and extent of disturbance has that has occurred is known. In addition, there are large areas unbroken by roads. This is essential to the protection and conservation of plant and animal species.

Location: Entire monument

Source: Wilcox et al 1986; wilcox and Murphy 1985; Mader et al., 1990; Osley, et al., 1974; Rost and **Bailey**, 1979; Witmer and Calesta, 1985

Description: The monument lacks any areas that have been invaded to any **large** extent by exotic species. There are few such areas in the Intermountain West, and they can provide invaluable information in understanding the ecology and

dynamics of exotic plant invasion. These areas aid scientists in understanding what makes systems resistant to such invasions, and thus help land managers predict what areas are susceptible to invasion and restore already-invaded regions.

Location: Entire monument

Source: Billings, 1994; fleischner, 1994; Forcella and Harvey, 1983; Gross, 1987; Hester, 1990; Loope et al., 1988; MacMahon, 1987; Pelant, and Hall, 1994

Description: Six threatened or endangered candidate species are located **within** or near **is-area**.

Location: Wahweap WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Contains Peregrine falcon (endangered) and 6 special status species. DOI-2019-05 02155

species and 5 ~~special status~~-plant-species. - - - - -
Location: Mud Spring WSA

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Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Habitat for Swainson's hawk, golden eagle (Sensitive) and peregrine falcon (endangered).

Location: The Blues WSA

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Peregrine falcon and bald eagle (endangered).
species of special status.

8 animal and 5 plant

Location: Paria-Hackberry and Cockscomb WSA and **Wahweap WSA**

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Thirteen species of raptors are known or suspected of nesting in the WSA

Location: Burning Hills WSA -

Source: Utah BLM Statewide Final Wilderness EIS, 1.990

Description: Relict plant community in the upper part of Dry Valley • probably
possesses important scientific values•

Location: Mud Spring, Carry on - WSA -

Source: Utah BLM Statewide Final Wilderness EIS, 1990

Description: Unique relict plant community of sagebrush-grass
and grasses accessible only by a steep trail. One or the few remaining
natural plant communities in Utah. No Man's Mesa was designated as an ACEC in
1986. Such areas are invaluable to science. They represent restoration and management goals of
the administration of lands. such areas are also critical to scientists
who are trying to understand the natural functioning of ecosystems.
Grasslands are especially valuable, as almost all have been heavily grazed for

over a century.

Location: Paria-Hackberry WS (No Man's Mesa and Little No Man's Mesa)

Source: Utah BLM Statewide Final EIS, S.. 90 -- d ; ; and Barp ,
19 72 . }

Description: Four Mile Bench Old Tree Area. Unique area of extremely old (1,400
years) pinyon and juniper trees. Unique scientific values on over 1,000 acres.

Location: Wahweap WSA

Source: Utah BLM Statewide final Wilderness EIS, 1990

Description: This region is at the northern end of areas that receive summer monsoonal rains; and is at the southern end of areas that receive winter rains. This distinction is very important to the physiological functioning of plants in this moisture-limited area, as even minor changes in temperature and/or rainfall may lead to major differences in water availability; and consequently, plant metabolic processes. Climate change is expected to alter both rainfall timing and amount, as well as temperature. This, in turn, would alter plant physiology, water use patterns and community composition in this

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Interest*

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region, making the monument an excellent place for studying global climate change.

Location: Entire monument

Sources: Ayyad 1981; Graff 1988; Van Oevender and Spaulding 1979; Wagner 1981

Description: Unlike most deserts that are primarily depositional environments, the CP is an erosional one (Welsh 1979; Nat Hist). This contributes to high _____, .. endemism, as substrate material is not mixed. In addition, it makes this region highly susceptible to soil loss when surfaces are disturbed. This oil loss has a negative impact on plant and aquatic communities, as well as dam sediment - loads.

Location: Entire monument

Source: Welsh, 1979; Harper et al., 1994

Description: The effect of scaling up and down are not known for many ecological processes. The multitude of variably sized, discrete watersheds found in this area offer a unique opportunity to study the effects of scaling for hydrological and biological processes. In addition, the close spacing of these watersheds offers a chance to separate the effects of area per se from other environmental factors on community structure.

Location: Entire monument

Source: Allen and Hoekstra 1987; Reice 1994; Pickett and White 1985 ; RQsenweig 1985

Description: Semi-arid and arid lands of the western United States are highly susceptible to desertification. The lack of natural disturbance in much of this area offers the opportunity to study the effects of different land-use types - leading to desertification.

Location : Entire monument

Source: Dregne, 1983

Description: This area contains few exotic plants. Having this resource gives the opportunity to better understand what factors inhibit or facilitate exotic plant invasions. Roads have been heavily implanted, facilitating exotic plant invasion; while intact Cryptobiotic soil crusts and less favorable soil chemistry may inhibit such an invasion. Invasion could fundamentally alter these

communities, by altering species composition, community structure, and fire cycles

Location: Entire monument

Source: Monsen and Kitchen, 1994; Kelly 1996; Harper and Marle 1988 ; Davidson et al. 1996

Description: Quaternary resources are abundant in the monument. Reconstruction of paleoclimates and paleo-vegetation while found in alcoves. Pack rat middens enable Pleistocene animal remains

Location: Entire monument

Source: Harper et al . 1994

Description: Unlike more mesic ecosystems, there is little evidence that desert communities are traditional successional sequences. There is little or

no modification of soils or other site characteristics by previous occurring plants. Understanding of this is important for restoration efforts. The monument offers an excellent opportunity to study this phenomenon independent of climate and disturbance factors.

Locatio : Entire monument

So"Urce:Barbour, 1981: MacMahon, 1987; Shreve, **1942**; Dott, 1996

Description: Peregrine falcon and Bald Eagle use these **areas**. Areas are habitat for 7 plant and 9 animal species considered sensitive.

Location: Death Ridge and Fifty Mile MountaL. WSAs

Source: Utah Statewide Wilderness Study Report,

199

Description: Peregrine falcon and Bald Eagle use these **areas**. Areas are habitat for 8 plant and 7 animal species considered sensitive.

Location: Phipp S Death Hollow ISA and Steep <; r eek WSA

n.

Source: Utah Statewide Wilderness Study Report. 1.991

Areas are habitat

Description: Peregrine falcon and Bald Eagle use these areas. for 9 plant and 7 animal species considered sensitive.

Location: North Escalante Canyon, Nine Gulch and Carr Canyon WSAs

Source: Utah Statewide Wilderness Study Report, 1.991

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